REMARKS

This Amendment, submitted in response to the Office Action dated January 22, 2003, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

Claims 3-7 and 9-14 remain pending in the application, with claims 1-2 and 8 being withdrawn from further consideration at this time. Claims 9 and 12 have been rejected under 35 U.S.C. § 112, first paragraph, for failing to use the same language in the claims as in the specification. Applicant has amended claims 9 and 12 as set forth above. Applicant submits that the claim modifications should be entered as they merely adopt the language cited by the Examiner, and therefore no new issues are raised and the amendment simplifies matters in the event of appeal. The Examiner has also previously considered the claims on the merits in accordance with the proposed change in language.

With regard to the prior art rejections, claims 3-5 and 10-11 have been rejected under 35 U.S.C. § 103 as being unpatentable over Lazarev in view of Wilder. Claims 6, 7, 9 and 12-14 have been rejected under 35 U.S.C. § 103 as being unpatentable over Lazarev, Wilder and further in view of Talmi. All references are previously of record. Applicant submits the following arguments in traversal of the prior art rejections.

Applicant's invention relates to an imaging apparatus. Detailed descriptions of the background and exemplary embodiment are set forth in the August 14, 2002 Amendment at pages 5-6. Lazarev and Wilder are described at page 7 of the Amendment, and Talmi is described at page 8. Applicant refers the Examiner to these descriptions.

Further to these descriptions, Applicant would emphasize that Applicant's invention describes an image sensor having an array of pixels in an imaging region for image fluorescence and a non-imaging region. Features of the exemplary embodiments indicate how to define and read the non-imaging region in distinction from an imaging region.

Lazarev describes a dual path between picked up light that passes through a beam splitter 20. The beam splitter merely passes a portion of the common light between an image pick up device 22 and a beam splitter 26. Similarly, the beam splitter 26 provides a copy of the same image to each of a band pass filter 30 and a band pass filter 32. Though the images are described as laterally spaced, both of the outputs of the filters 30, 32 are focused onto a image pick up device 28. The filter 30 passes fluorescence of a wavelength between 508 and 523 nm (maximum dye fluorescence λ_1), and the filter 32 passes fluorescence of wavelength between 489 and 504 nm (minimizing autofluorescence λ_2). Col. 7, lines 4-16. Therefore, it is clear that both filters optimize a fluorescent image. Both measurements of λ_1 and λ_2 are required in order to maximize the fluorescent contribution. See col. 8, lines 50-67 (Equation 2).

As a related matter, Applicant would submit that a beam splitter divides a light beam into a reflected part and a transmitted part. See Attachment A. No part of Lazarev suggests division of the image between a first spatial part and a second spatial part. Therefore, Applicant would submit that the beam splitter (element 26, Fig. 1 or element 76, Fig. 2) transmits the same light information to both filters 30, 32. The description of the images as being spatially separate merely refers to the fact that the same images are input to filters spaced apart, not that the images relate to different spaces, such as an imaging region and a non-imaging region. It is believed

that this "spatial" language is in contradistinction to the temporal filtering that is also discussed by Lazarev. See col. 11, lines 6-22.

The Examiner maintains that the prior arguments were not persuasive and maintains the prior art rejections over the art of record. As an initial matter, Applicant note that the Examiner has reformulated the rejection with regard to the imaging and non-imaging areas of Lazarev in response to the prior Amendment. The Examiner has already previously designated that the areas 30, 32 correspond to fluorescent imaging areas. Office Action dated May 14, 2002, page 3, lines 12-13. The Examiner now relies only on area 30 as corresponding to the imaging area, indicating that other areas correspond to the non-image area. The Examiner now apparently includes the output of filter 32 as a non-imaging area. This creates a clear inconsistency in the record. The shift in position provides at least a tacit recognition that the prior analysis includes fundamental flaws. Applicant would maintain that the present analysis is further incorrect for the reasons set forth below.

The Examiner's Response to Arguments acknowledges that the second image sensor obtains two fluorescent images, albeit of different wavelengths. Office Action dated January 22, 2003, page 7 at lines 16-17. Therefore, the Examiner even now acknowledges that the second sensor (e.g. sensor 28) receives two fluorescent images. Applicant would submit that the Examiner cannot maintain that one of the regions corresponds to an imaging region and the other two a non-imaging region when both regions are acknowledged by the Examiner to include fluorescent images.

The Examiner continues to correctly concede that Lazarev lacks an imaging control means such that pixels of the non-imaging area are prevented from being read. The Examiner continues to rely on Wilder to obviate the deficiency. The Examiner maintains that it would be obvious to prevent reading of unimportant pixels to minimize time for reading. The Examiner's rationale relative to the teachings of Lazarev and Wilder are incorrect. Lazarev acknowledges that the low intensity levels of light read by the pick up 28 (i.e. a low level light device LLL) must be processed in order to obtain accurate fluorescence information. Therefore, the output of filter 30 must be processed in conjunction with the output of filter 32. See equation 2 of Lazarev. Therefore, Lazarev completely teaches away from preventing reading of a non-imaging area and in fact requires reading of the purported non-imaging area 32. In fact, if the area 32 was not read, this would defeat the principle of operation of Equation 2 of Lazarev.

The Examiner's explanation with regard to the field stop of the endoscope does not negate the fact that two images, corresponding to filter output 30 and 32 are formed.

The regard to the Examiner's Response to Argument at page 8, second full paragraph, the Examiner's paraphrase of previously submitted arguments is incorrect. The prior arguments did not state that "areas outside the region of interest are <u>not</u> formed as image forming areas." Rather, it was previously submitted that all areas are initially formed as image forming areas, meaning that Wilder did not contemplate formation of any non-image forming areas. Stated differently, Wilder images the regions of interest and also images the regions outside the regions of interest, leaving no non-image forming areas. Thus, Wilder continues the deficiency of Lazarev, including several image forming areas and special processing of certain sets of those image-forming areas. By contrast, the claim distinguishes an image forming area and special

treatment for non-image forming areas. Contrary to the Examiner's position, all arguments are directed to the claim recitations.

Assuming *arguendo* that Lazarev and Wilder can be combined, the Examiner again acknowledges that "In the Multiple Region of Interest (MRI) mode, any region or regions of the image sensor 10 may be selected and the pixels within that region scanned in any of the variable resolution modes." Wilder, col. 4. The Examiner also characterizes some pixels as important or unimportant. In fact, the Examiner's rationale to combine the references depends upon unimportant pixels not being read. The Examiner's analysis ignores the fact that in order to determine the region of interest (important and unimportant areas), this necessarily requires that an entire image, having no non-image forming areas, must initially be imaged. Therefore, Wilder does not contemplate a non-image forming area. Once an overall image is formed, Wilder does discuss disparate treatment of regions of interest, but one region of interest can only be determined as more important or less important relative to another imaged area. Wilder does not contemplate *a priori* determination of an area of non-imaging. Rather an area where image is not read corresponds to an imaged area that is subsequently determined not to be region of interest. However, Wilder does not indicate that this converts the imaged area to a non-imaging area.

Each of the Examiner's citations to col. 6, lines 40-44, col. 18, lines 7-12 require distinguishing an area of importance from an area of non-importance, i.e. evaluating the importance between two imaged areas. Non-imaging areas play no part of this analysis. With regard to the Examiner's citation of col. 17, lines 64-66, this corresponds to bypassing certain pixels during the readout process. However, the pixels still hold image information, i.e. hold

information of an imaged area even if unread. Nothing requires the unread pixel to correspond to a non-imaging area. Applicant would submit that this is apparent from the context of the discussion of such unread pixels as having an infinite optical integration time that could saturate an output device. This implies the presence of a previously read signal (i.e. an imaged area) that corresponds to an image of low interest that simply remains unread. The Examiner has not offered any rebuttal to this reading of Wilder. The Examiner has not set forth a prima facie case of obviousness since the unread area, as explained above, corresponds to an image area. As previously indicated, the Examiner bears the burden in the event of any ambiguity in the reference. Here, the Examiner has failed to prove that the unread pixel necessarily or inherently corresponds to a non-image area. Therefore, Applicant would continue to maintain that Wilder does not teach prevention of reading in a non-image area.

Claims 3-4 each include similar recitations with regard to treatment of a non-image area are patentable for each of the reasons set forth above. The remaining claims are patentable based on their dependency.

With further regard to claims 6-7, the Examiner contends that the fluorescence imaging region 30 is off center from the imaging area. However, because the Examiner previously conceded that the regions 30, 32 identify fluorescent regions, it is clear that these regions are centered on a detector and not off center as claimed. The region 32 of Lazarev must correspond to an imaged area given its importance in the reference.

With regard to claims 9 and 12, the Examiner cites Talmi, col. 1 lines 34-35 to teach the blockage of the non-imaging region of an array of pixels by an opaque film. The Examiner's

reliance is misplaced since the pixel array comprises element 105. The reference rows 103 are outside of the active array, and thus merely constitute a border around the array and not a shield of a non-imaging region of the plurality of pixels. Moreover, if the region 32 were blocked by an opaque film, this would defeat the principle of operation of the Lazarev reference. The combination with Talmi and Lazarev is clearly improper.

With regard to claims 10-11 and 13-14, the Examiner cites col. 4 of Wilder. However, the row and column control does not indicate setting of reading corresponding to a non-image area.

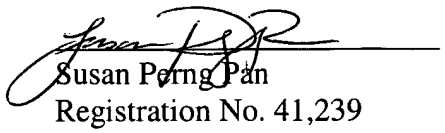
It is further noted that the Examiner has set forth prior art rejections for the binning recitations in the claims 1-2 and 8, previously withdrawn. See Office Action of January 22 at page 9, line 10. Since the arguments relative to a non-imaging region applies to claims 1, 2 and 8, the withdrawn claims should be rejoined and allowed in the application.

Applicant further notes that the present invention reduces the signal-to-noise ratio of the image of the target region by shortening a time for reading relative to a non-imaging region. Accordingly, the image having low luminance can be read efficiently. None of the art of record includes teachings that would address the problems of the present invention.

In view of the above, Applicant submits that claims 1-14 are in condition for allowance. Therefore it is respectfully requested that the subject application be passed to issue at the earliest possible time. The Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

9 (Amended). The imaging apparatus according to claim 3, wherein the non-imaging region is [covered] blocked by an opaque film.

12 (Amended). The imaging apparatus according to claim 6, wherein the non-imaging region is [covered] blocked by an opaque film.